

Report #2 (R2)

Identifying Candidate International Gateways and Foreign Geography Detail per FAF Needs

Background

International trade is a significant portion of the U.S. economy. During 2004, U.S. international merchandise trade reached \$2,290 billion. The export portion was about \$819 billion, while imports reached \$1,471 billion. Although the United States trades with many partners, that trade is concentrated with only a few countries. The top fifteen countries account for about 75% of the total value of foreign trade merchandises.

U.S. international trade is processed through more than 400 U.S. seaports, airports, and land-based border crossings. However, most international trade passes through a relatively small number of gateways. For example, in 2003,

- The top five freight transportation gateways in the U.S. handled more than one-fourth (\$533 billion) of the total U.S. international trade by dollar value;
- More than 50 percent, by value, of U.S. international merchandise trade is handled by the top 14 freight transportation gateways; and
- The top 50 U.S. international gateways handled 80 percent (\$1.6 trillion) of that trade.

Information on freight involving international trade and its associated domestic movement by mode of transportation is of prime interests to the Freight Analysis Framework (FAF). Increasing trade deficits, potential terrorist threats, and growing traffic congestion have elevated public concern about imports and exports – in particular their points of arrival and departure. The base geography of the FAF is that of the Commodity Flow Survey (CFS) – i.e. 114 regions that include some of the largest international gateways for imports and exports. However, not all major gateways are included as CFS regions. In order to adequately describe actual freight movements related to international trades, additional international trade gateways (as origins and destinations) are needed within the 2002 FAF. This paper summarizes an analysis of all major international gateways and recommends that an additional 17 gateways be added to the 114 CFS regions for the 2002 FAF. These regions are referred to as the CFS-extended geography. Recommendations for additional gateways must balance the benefits of more accurate freight flows with greater model and data complexity.

Data Sources

This analysis was based on data from a variety of sources. Information on international trade volumes, in terms of weight and dollar value came from the following data sources:

Border Crossing - Highway and Railroad

Transborder Surface Freight Data prepared by the Bureau of Transportation Statistics.

Seaports - Waterborne

Official U.S. Waterborne Transportation Statistics published by the Maritime Administration (MARAD)

Airports - Air Cargo

T-100 International Segment [Air Carrier Statistics (Form 41 Traffic)] published by the Office of Airline Information, Bureau of Transportation Statistics.

Trade Partners

U.S. Imports of Merchandise and U.S. Exports of Merchandise compiled by the Freight Trade Division, U.S. Census Bureau.

Gateway Selection Procedure

Based on the above stated methodology, a preliminary set of gateways to supplement CFS regions is determined as follows:

- Candidate gateways are selected from the top gateways with a combined total of 80 percent of the total dollar value of U.S. trade and 80 percent of the total weight of U.S. trade (up to 25 candidates). These include gateways for
 - Border crossings by highway, by value and by weight (no exports by weight information),
 - Border crossings by railroad, by value and by weight (no exports by weight information),
 - Seaports by value and by weight, and
 - Airports by weight.
- Candidate gateways that are located within the CFS metropolitan areas (MAs) are eliminated.
- Remaining candidate gateways are ranked (for border crossings, seaports, and airports). Candidate gateways are arranged in their original ranking orders. The rows of three tables represent the candidate gateways and the columns of these tables represent transportation modes by weight and by value for border crossings, by weight and by value for seaports, and by weight for airports.

- Combined rankings are rearranged in ascending order for each type of gateway (i.e. airport, seaport, and highway/rail). A preliminary set of international trade gateways is then selected from each of these three tables.
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Preliminary Results

Recommended International Gateways for FAF by Type

Based on the selection process outlined above, the following 17 gateways are recommended for inclusion in the 2002 FAF:

Border Crossings:

Laredo, TX
Blaine, WA
International Falls, MN
Champlain/Rouses Point, NY
Alexandria Bay, NY
El Paso, TX
Brownsville/ Hidalgo, TX

Seaports:

Beaumont, TX
Charleston, SC
Portland, ME
Savannah, GA
Morgan City, LA
Corpus Christi, TX
Lake Charles, LA
Baton Rouge, LA
Mobile, AL

Airport:

Anchorage, AK

Geography for Foreign Trade Partners

The current FAF geography groups all foreign trade partners into six trade regions: Canada, Mexico, Europe, Latin America, Asia, and Rest of World (ROW). An assessment of the adequacy of these trade regions was included within this study. A similar procedure as that described for international gateways was employed in the assessment of foreign geography. As a result, the Middle East is recommended as a potential candidate to be added to supplement existing FAF foreign regions.

Introduction

A great deal of U.S. freight enters and leaves the country through a relatively small number of major seaports, airports, and land border crossings. Although many of these international gateways are already included in the 114 CFS regions (including 64 metropolitan areas, 33 “remainder of states” regions, and 17 small states), a number of significant international gateways for freight are combined into “remainder-of-state” regions. To better reveal significant foreign trade freight flows, these international gateways should be identified and separated from their associated “remainder-of-state” regions. This study recommends a set of candidate international gateways that should be added to the 114 CFS regions to form the geography for the 2002 FAF.

Ideally, freight analysis models should track international trade freight movements from their origin and destination countries. However, due to the availability of data and the complexities of modeling, foreign trade origins and destinations are reduced to a manageable number. Using foreign trade regions, instead of individual countries, as origins and destinations is a viable alternative. Under the second-generation FAF, called FAF², international freight flows were divided into six regions. They are Canada, Mexico, Europe, Latin America, Asia, and Rest of World (ROW). This study examines foreign geography to assess whether additional detail is merited to better reflect international freight flows for FAF needs.

Data Sources

Border Crossing - Highway and railroad

Transborder Surface Freight Data

Highway and railroad freight data are based on the Bureau of Transportation's *Transborder Surface Freight Database*. This database provides North American merchandise trade data by commodity type, by surface mode of transportation (rail, truck, pipeline, mail and other), and with geographic detail for U.S. exports to and imports from Canada and Mexico. There is no freight value information on exports, however.

Seaports - Waterborne

Official U.S. Waterborne Transportation Statistics

Information on imports and exports through U.S. seaports is based on the *U.S. Foreign Waterborne Transportation Statistics* published by the Maritime Administration (MARAD). The database contains monthly statistics on U.S. foreign trade imported or exported by vessel. The data are compiled by MARAD during its regular processing of statistics on foreign trade shipments. Information contained in this data set reflects the physical movement of waterborne foreign trade shipments into, and out of, U.S. foreign trade zones, the Virgin Islands, and U.S. Customs territories (including the 50 states, the District of Columbia, and

Puerto Rico). It contains information on the type of vessels, commodities, weight, customs districts and ports, and origins and destinations.

Airports - Air Cargo

T-100 International Segment [Air Carrier Statistics (Form 41 Traffic)]

International trade by air is based on *Air Carrier Traffic Statistics* published by the Office of Airline Information, Bureau of Transportation Statistics (BTS). This database contains monthly data reported by certificated U.S. and foreign air carriers on passengers, freight, and mail they transport. It also includes aircraft type, service class, available capacity and seats, and aircraft hours ramp-to-ramp and airborne.

Trade Partners

U.S. Imports of Merchandise and U.S. Exports of Merchandise

Freight information used for identifying U.S. major international trade partners is based on *U.S. Exports of Merchandise* and *U.S. Imports of Merchandise on DVD-ROMs*, compiled by the Freight Trade Division, U.S. Census Bureau. Data on the *U.S. Exports of Merchandise DVD-ROM* provides information on value, quantity, method of transportation, and shipping weights for 9,000 exported commodities, between 240 trading partners, and for 45 districts. Similarly, data on the *U.S. Imports of Merchandise DVD-ROM* provides types of products that are being imported into the U.S. It also contains information on a wide range of products; more than 17,000 commodities ranging from wheat, airplanes, cars, to computers and artwork. This DVD-ROM includes data for 240 trading partners and 45 districts. It provides value, quantity, and method of transportation, shipping weights, import charges, and custom duties.

Gateway Selection Procedure

After careful consideration, the following procedure was formulated and used in selecting international gateways to supplement the 114 CFS regions for the 2002 FAF. This selection process includes three steps.

Step 1: Identify Preliminary Candidates

To begin, candidate seaports, airports, and border crossings are identified based on the “significance” of their contribution toward the U.S. international trade total. A significance measure was based on weight (tonnage) or value (\$) of freight being handled by the given facility (e.g., shipments passing through a seaport). For seaports, the amount of containerized cargo processed at the port facility is also included as a measure in identifying gateway candidates. Note that seaports recommended for inclusion as additional international gateways based on

containerized cargo are included within the gateways selected on the basis of other criteria. Therefore, a separate table for seaports selected on the basis of containerized cargo is not presented in this report.

All facilities (i.e. seaports, airports, and border crossings) are ranked in descending order by tonnages and values of freights passing through their jurisdiction by mode of transportation. Top contributing seaports, airports, and border crossings (up to 25 facilities each) were identified by using a cut-off of 80% cumulative total in tonnages and values.

Step 2: Eliminate Candidates Already in FAF Metropolitan Areas

The second step is to eliminate duplication with existing CFS regions. Each additional international gateway added to the existing 114 CFS regions will add processing efforts to subsequent tasks. These include the origin-destination matrices, forecasting, as well as flow assignments. Thus, candidate seaports, airports or border crossings located within existing FAF metropolitan areas are not separated from their MA regions. Consequently, these candidates are removed from the list generated in Step 1.

Step 3: Select International Gateways Based on Combined Ranking Scores

The remaining international gateways are rearranged by their original rankings and combined into a table. A combined “score” is calculated to reflect the combined significance of each gateway. The final set of gateways is determined by ranking of combined scores. More detail on this process is given in the following section.

Gateways Selection Example - Boarder Crossings between U.S.-Canada and U.S.-Mexico

To better illustrate the selection procedures, an example is given – i.e. selecting international gateways along the U.S.-Canada and U.S.-Mexico borders by highway and rail.

Step 1: Select Gateway Candidates

Candidate border crossings by dollar value of freights transported between U.S.-Canada and U.S.-Mexico are identified and presented in Table 1. Both dollar value (\$) and weight (tonnage) are used in this selection.

Table 1. Candidate Highway Board Crossings with Canada and Mexico by Value

Name	Exports (\$)	Imports (\$)	Total Foreign Trade (\$)	% of Total	In MA
Detroit MI	\$48,631,644,477	\$36,178,973,987	\$84,810,618,464	21.1%	Y
Laredo TX	\$24,160,772,426	\$30,459,008,739	\$54,619,781,165	34.7%	N
Buffalo/Niagara Falls NY	\$24,988,019,401	\$20,764,579,978	\$45,752,599,379	46.1%	Y
El Paso TX	\$16,190,233,104	\$19,745,171,951	\$35,935,405,055	55.0%	N
Port Huron MI	\$18,170,710,173	\$17,548,936,732	\$35,719,646,905	63.9%	Y
Otay Mesa Station CA	\$8,260,389,400	\$11,400,334,548	\$19,660,723,948	68.8%	Y
Brownsville/Hidalgo TX	\$6,204,142,895	\$8,135,922,774	\$14,340,065,669	72.4%	N
Champlain/Rouses Point NY	\$4,845,415,199	\$7,894,263,770	\$12,739,678,969	75.5%	N
Alexandria Bay NY	\$3,832,476,729	\$6,192,527,176	\$10,025,003,905	78.0%	N
Blaine WA	\$4,935,105,190	\$4,945,983,532	\$9,881,088,722	80.5%	N

Key: MA=metropolitan area identified in the 2002 CFS.

Note: Due to data limitations, weight (tonnage) information for exports is not available. Therefore, only imports information is used in identifying these candidate border crossings by weight. The selected candidate border crossings by weight are presented in Table 2.

Step 2: Eliminate Gateways already in FAF MA Regions

Candidates selected in the first step were compared to the geography of the existing FAF MA regions. Only those that are not located within existing FAF metropolitan areas were chosen under this second selection process. The status of each selected candidate, with respect to existing FAF MA regions, is presented in the rightmost columns of Tables 1 and 2.

Table 2. Candidate Highway Board Crossings with Canada and Mexico by Weight (kg)

Name	Imports (kg)	Total Foreign Trade (kg)	% of Total	In MA
Detroit MI	13,200,064,302	13,200,064,302	15.3%	Y
Buffalo/Niagara Falls NY	10,345,675,014	10,345,675,014	27.4%	Y
Port Huron MI	8,790,669,521	8,790,669,521	37.6%	Y
Laredo TX	8,435,927,802	8,435,927,802	47.4%	N
Champlain/Rouses Point NY	4,234,373,236	4,234,373,236	52.3%	N
Alexandria Bay NY	3,475,709,043	3,475,709,043	56.4%	N
Blaine WA	3,249,531,068	3,249,531,068	60.1%	N
Pembina ND	2,527,675,018	2,527,675,018	63.1%	N
Nogales AZ	2,424,300,324	2,424,300,324	65.9%	N
Otay Mesa Station CA	2,350,042,831	2,350,042,831	68.6%	Y
El Paso TX	2,173,749,923	2,173,749,923	71.2%	N
Brownsville/Hidalgo TX	2,012,529,858	2,012,529,858	73.5%	N
Sweet Grass MT	1,822,043,740	1,822,043,740	75.6%	N
Derby Line VT	1,708,770,514	1,708,770,514	77.6%	N
Highgate Springs/Alburg VT	1,409,447,503	1,409,447,503	79.2%	N
Houlton ME	1,333,409,249	1,333,409,249	80.8%	N

Key: kg=kilograms; MA=metropolitan area identified in the 2002 CFS.

Step 3: Final Selection Based on Combined Ranking Scores

Gateways identified in Tables 1, 2, and A-1, A-2, for highway and rail respectively, are re-arranged and entered into Table 3. The original rankings for highway and railroad are preserved. Cells with no original ranking are set to 99. By doing so, those with high individual rankings in multiple categories (e.g., by value and weight for both highway and rail) result in a higher combined ranking. The combined ranking scores were calculated as the sum of individual ranks, where the smaller the score is, the higher its order of importance becomes.

Based on the combined ranking scores, seven border crossing were identified as recommended international gateways between U.S.-Canada and U.S.-Mexico. They are: Laredo, TX; Blaine, WA; International Falls, MN; Champlain/Rouses Point, NY; Alexandria Bay, NY; El Paso, TX; and Brownsville/Hidalgo, TX.

Table 3. Border Crossings Gateways by Surface Mode (highway and railroad)

	Ranked order				Combined ranking
	Highway		Rail		
	Value	Weight	Value	Weight	
Laredo, TX	2	4	1	6	13
Blaine, WA	10	7	99	4	120
International Falls, MN	99	99	5	1	204
Champlain Rouses Point, NY	8	5	99	99	211
Alexandria Bay, NY	9	6	99	99	213
El Paso, TX	4	11	99	99	213
Brownsville/ Hidalgo, TX	7	12	99	99	217
Portal, ND	99	99	99	3	300
Pembina, ND	99	8	99	99	305
Noyes, MN	99	99	99	8	305
Nogales, AZ	99	9	99	99	306
Eastport, ID	99	99	99	9	306
Sweet Grass, MT	99	13	99	99	310
Derby Line, VT	99	14	99	99	311
Highgate Springs/Alburg, VT	99	15	99	99	312
Houlton ME	99	16	99	99	313

Notes: 99 = not a contributing facility for the 80% of U.S. total. Highlighted are top border crossings by ranking for FAF international gateway needs.

A similar procedure is used to select seaports, airports, and grouping of foreign trading partners into regions. The following sections provide the resulting gateway selections from Step 3 for seaports and airports. Detailed information per their selection processes, as well as the grouping of foreign trade partners, is presented in Appendices of this report.

Selected International Gateways for Seaports

The combined ranking scores calculated for seaports that are not already in the FAF MA regions are presented in Table 4. Highlighted gateways are seaports to be recommended as additional FAF regions. These ports play significant roles, by value and/or by weight, in U.S. foreign trades via waterway. Freight flows in these regions are expected to be significantly different from others in their respective remainder of states.

Table 4. International Gateways by Waterway (seaports)

	Ranked order		Combined ranking
	Value	Weight	
Beaumont, TX	16	5	21
Charleston, SC	5	22	27
Portland, ME	15	15	30
Savannah, GA	12	21	33
Morgan City, LA	99	6	105
Corpus Christi, TX	99	7	106
Lake Charles, LA	99	12	111
Baton Rouge, LA	99	13	112
Mobile, AL	99	14	113
Pascagoula, MS	99	20	119
Wilmington, DE	99	23	122
Port Arthur, TX	99	24	123

Notes: 99 = not a contributing facility for the 80% of U.S. total. Highlighted are recommended waterway gateways for FAF purposes.

Selected International Gateways for Airports

Almost all major airports were selected as candidates by the above described procedure are located in FAF MA regions. The only exception is Anchorage, Alaska. Anchorage handles a significant amount of international air freights, although most of them are for transshipments. Based on the quantity of freight processed, the study recommends that Anchorage, Alaska be added as an additional airport for the 2002 FAF.

Foreign Trade Regions

In order to evaluate foreign geography details for FAF needs, a similar procedure as that used in evaluating international gateways is used to identify top international trade partners for the U.S. Because of their large volume of trade, Canada, Mexico, and Latin America must be identified as separate regions. Therefore, this study only needs to address international freight flows via waterway and air. Both weight and value of imports and exports are used in the selection of foreign trade regions.

The study first identified the top trade partners that account for 80% of total U.S. trade (up to 25 countries). This selection was based on weight/value of total imports and exports by air/water. Detailed statistics for these top trade partners are presented in Tables B-1 through B-4 in Appendix B of this document. Corresponding maps displaying the size of imports and exports from each trade partner are depicted in Figures B-1 to B-4. Note that imported and exported freight via water is not concentrated at a few seaports (see maps). The top 25 seaports accounted for slightly less than 80% (78% by weight and 79% by value) of the U.S. total shipped by waterway. International air cargo, on the other hand, is more concentrated (see maps). The top 24 airports by weight, or 18 airports by value, account for over 80% of total U.S. air shipments.

These top trade partners by water and by air are then combined into a single table. Top trade partners are arranged in ascending order based on their combined rankings. Those that are not ranked individually (e.g. not in the top ranking by one of the selection criteria) are set to 99. By doing so, those having higher ranking in all first-step categories will have a higher combined ranking. The top trade partners are presented in Table 5.

Table 5. Top Trade Partners by Water and Air

Trade Partners	Ranking Order				Combined Ranking
	Waterborne		Air		
	By Weight	By Value	By Weight	By Value	
Japan	5	2	1	1	9
China	6	1	2	2	11
United Kingdom	8	5	4	3	20
Korea, South	11	4	9	5	29
Germany	21	3	3	4	31
Taiwan	15	6	6	7	34
Mexico ¹	1	7	17	16	41
Canada ¹	3	20	5	14	42
Brazil	7	9	12	17	45
Italy	18	11	8	11	48
Netherlands	19	14	10	15	58
France	99	12	7	8	126
Venezuela	2	8	99	28	137
Malaysia	99	17	15	9	140
Singapore	99	24	13	10	146
Hong Kong	99	19	11	19	148
Belgium	23	15	99	13	150
Australia	25	16	20	99	160
Saudi Arabia	4	10	99	99	212
Colombia	10	99	14	99	222
Ireland	99	99	21	6	225
Thailand	99	13	19	99	230
Israel	99	99	24	12	234
Russia	17	22	99	99	237
India	99	21	18	99	237
Philippines	99	99	23	18	239
Spain	22	25	99	99	245
Nigeria	9	99	99	99	306
Iraq	12	99	99	99	309
Norway	13	99	99	99	310
Angola	14	99	99	99	311
Trinidad and Tobago	16	99	99	99	313
Chile	99	99	16	99	313
Indonesia	99	18	99	99	315
Algeria	20	99	99	99	317
Switzerland	99	99	22	99	319
Dominican Republic	99	23	99	99	320
Kuwait	24	99	99	99	321

Notes: 99 = not a contributing facility for the 80% of U.S. total

¹Excludes transborder freight

Recommendation

International Gateways

All supporting statistics and maps for international freight gateways are included in Appendix A of this document. Based on the evaluation criteria, 17 additional international freight gateways are recommended for inclusion in the 2002 FAF. These include:

Border Crossings:

- Laredo, TX
- Blaine, WA
- International Falls, MN
- Champlain/Rouses Point, NY
- Alexandria Bay, NY
- El Paso, TX
- Brownsville/ Hidalgo, TX

Seaports:

- Beaumont, TX
- Charleston, SC
- Portland, ME
- Savannah, GA
- Morgan City, LA
- Corpus Christi, TX
- Lake Charles, LA
- Baton Rouge, LA
- Mobile, AL

Airport: Anchorage, AK

Foreign Geography

Supporting statistics and maps per the study's foreign geography evaluation are included in Appendix B of this document. Based on the evaluation criteria, the Middle East is a potential candidate for addition to the 2002 FAF. Note that under the most recent FAF, international freight flows are set to six regions: Canada, Mexico, Europe, Latin America, Asia, and Rest of World (ROW).

Appendix A: Detailed Information on International Gateways

Table A-1. Candidate Rail Boarder Crossings with Canada/Mexico by Value

Name	Exports (\$)	Imports (\$)	Total Foreign Trade (\$)	Cumm. % of Total	In MA
Laredo, TX	\$8,142,757,080	\$15,797,585,957	\$23,940,343,037	25.0%	N
Port Huron, MI	\$4,097,502,274	\$18,791,198,548	\$22,888,700,822	49.0%	Y
Detroit, MI	\$5,679,845,382	\$11,043,473,471	\$16,723,318,853	66.5%	Y
Buffalo/Niagara Falls, NY	\$1,762,663,859	\$7,364,118,440	\$9,126,782,299	76.0%	Y
International Falls, MN	\$746,303,438	\$3,861,969,849	\$4,608,273,287	80.8%	N

Key: MA=metropolitan area identified in the 2002 CFS.

Table A-2. Candidate Rail Boarder Crossings with Canada/Mexico by Weight

Name	Imports (kg)	Total Foreign Trade (kg)	Cumm. % of Total	In MA
International Falls, MN	11,901,647,646	11,901,647,646	16.2%	N
Port Huron, MI	11,774,665,868	11,774,665,868	32.3%	Y
Portal, ND	7,621,744,338	7,621,744,338	42.7%	N
Blaine WA	6,734,866,797	6,734,866,797	51.9%	N
Buffalo Niagara Falls, NY	5,490,825,052	5,490,825,052	59.4%	Y
Laredo, TX	4,673,653,989	4,673,653,989	65.7%	N
Detroit, MI	4,401,822,485	4,401,822,485	71.7%	Y
Noyes, MN	3,980,610,315	3,980,610,315	77.2%	N
Eastport, ID	3,812,125,859	3,812,125,859	82.4%	N

Key: MA=metropolitan area identified in the 2002 CFS.

Table A-3. Ranking of Boarder Crossing Gateways by Rail

	Ranking order		In MA
	By \$	By Kg	
Buffalo Niagara Falls, NY	4	5	Y
Detroit, MI	3	7	Y
International Falls, MN	5	1	N
Laredo, TX	1	6	N
Port Huron, MI	2	2	Y
Blaine, WA		4	N
Eastport, ID		9	N
Noyes, MN		8	N
Portal, ND		3	N

Key: MA=metropolitan area identified in the 2002 CFS.

Table A-4 Candidate Seaports by Value

Name	Exports (\$)	Imports (\$)	Total Foreign Trade (\$)	Cumm. % of Total	In MA
Los Angeles, CA	\$16,555,508,545	\$98,305,639,355	\$114,861,147,900	15.0%	Y
Long Beach, CA	\$15,850,363,930	\$78,916,085,571	\$94,766,449,501	27.4%	Y
New York, NY	\$23,833,549,822	\$70,804,038,596	\$94,637,588,418	39.8%	Y
Houston, TX	\$20,257,821,337	\$24,759,662,772	\$45,017,484,109	45.7%	Y
Charleston, SC	\$11,870,482,705	\$22,399,068,899	\$34,269,551,604	50.2%	N
Norfolk, VA	\$11,072,896,526	\$15,492,283,232	\$26,565,179,758	53.7%	Y
Seattle, WA	\$5,378,277,070	\$19,316,701,321	\$24,694,978,391	56.9%	Y
Baltimore, MD	\$5,260,144,409	\$19,068,684,762	\$24,328,829,171	60.1%	Y
Tacoma, WA	\$4,719,200,616	\$19,410,364,126	\$24,129,564,742	63.2%	Y
Oakland, CA	\$7,681,327,851	\$15,544,760,270	\$23,226,088,121	66.3%	Y
Miami, FL	\$9,359,226,491	\$11,701,609,431	\$21,060,835,922	69.0%	Y
Savannah, GA	\$7,005,178,055	\$13,335,392,421	\$20,340,570,476	71.7%	N
New Orleans, LA	\$9,295,765,081	\$8,663,309,572	\$17,959,074,653	74.0%	Y
Jacksonville, FL	\$2,654,540,712	\$8,835,723,617	\$11,490,264,329	75.5%	Y
Portland, OR	\$2,710,192,588	\$8,615,774,411	\$11,325,966,999	77.0%	Y
Beaumont, TX	\$872,311,858	\$10,213,184,874	\$11,085,496,732	78.5%	N
Port Everglades, FL	\$4,392,421,976	\$5,959,636,932	\$10,352,058,908	79.8%	Y
Port of South LA	\$6,080,649,428	\$3,541,094,070	\$9,621,743,498	81.1%	Y

Key: MA=metropolitan area identified in the 2002 CFS.

Table A-5 Candidate Seaports by Weight

Name	Exports (kg)	Imports (kg)	Total Foreign Trade (kg)	Cumm. % of Total	In MA
Houston, TX	28,249,096,851	71,106,228,900	99,355,325,751	8.5%	Y
New York, NY	11,002,142,339	59,714,233,978	70,716,376,317	14.6%	Y
Port of South LA	43,101,980,597	25,872,660,829	68,974,641,426	20.5%	Y
New Orleans, LA	38,711,703,350	28,251,830,034	66,963,533,384	26.2%	Y
Beaumont, TX	4,099,195,002	52,234,415,769	56,333,610,771	31.0%	N
Morgan City, LA	135,401,696	46,726,523,406	46,861,925,102	35.0%	N
Corpus Christi, TX	7,555,507,403	37,605,222,257	45,160,729,660	38.9%	N
Los Angeles, CA	12,125,688,462	31,373,520,579	43,499,209,041	42.6%	Y
Long Beach, CA	13,717,648,516	28,675,509,965	42,393,158,481	46.3%	Y
Texas City, TX	3,148,030,231	28,577,534,940	31,725,565,171	49.0%	Y
Philadelphia, PA	402,595,942	26,419,965,762	26,822,561,704	51.3%	Y
Lake Charles, LA	3,832,605,213	22,438,506,096	26,271,111,309	53.5%	N
Baton Rouge, LA	4,445,857,138	20,397,723,533	24,843,580,671	55.7%	N
Mobile, AL	7,517,851,465	15,672,924,509	23,190,775,974	57.6%	N
Portland, ME	268,552,448	22,810,398,632	23,078,951,080	59.6%	N
Baltimore, MD	4,971,668,892	16,423,826,060	21,395,494,952	61.5%	Y
Christiansted, VI	1,382,507,583	18,936,518,106	20,319,025,689	63.2%	N
Norfolk, VA	11,982,663,764	8,252,474,015	20,235,137,779	64.9%	Y
Freeport, TX	1,815,828,234	18,087,411,738	19,903,239,972	66.6%	Y
Pascagoula, MS	2,190,191,195	16,873,782,230	19,063,973,425	68.3%	N
Savannah, GA	7,822,618,377	10,277,643,321	18,100,261,698	69.8%	N
Charleston, SC	5,399,820,634	12,209,100,332	17,608,920,966	71.3%	N
Wilmington, DE	414,866,798	15,365,889,330	15,780,756,128	72.7%	N
Port Arthur, TX	2,857,784,821	12,839,737,457	15,697,522,278	74.0%	N
Paulsboro, NJ	120,758,481	15,244,489,730	15,365,248,211	75.3%	Y

Key: MA=metropolitan area identified in the 2002 CFS.

Table A-6 Ranking of Seaport Gateways

	Ranking order	
	By \$	By kg
Baton Rouge, LA		13
Beaumont, TX	16	5
Charleston, SC	5	22
Christiansted, VI		17
Corpus Christi, TX		7
Lake Charles, LA		12
Mobile, AL		14
Morgan City, LA		6
Pascagoula, MS		20
Port Arthur, TX		24
Portland, ME	15	15
Savannah, GA	12	21
Wilmington, DE		23

Key: kg=kilogram

Table A-7. Candidate Airports by Weight

Name	Exports (kg)	Imports (kg)	Total Foreign Trade (kg)	Cumm. % of Total	In MA
ANCHORAGE INTL	635,604,690	1,360,730,272	1,996,334,962	26.0%	N
MIAMI INTL	479,359,424	777,323,315	1,256,682,739	42.4%	Y
JOHN F KENNEDY INTL	316,339,146	493,782,128	810,121,274	52.9%	Y
LOS ANGELES INTL	226,854,928	335,251,414	562,106,342	60.3%	Y
CHICAGO O'HARE INTL	217,986,465	254,637,531	472,623,996	66.4%	Y
SAN FRANCISCO INTL	119,362,131	140,715,880	260,078,011	69.8%	Y
NEWARK INTL	92,085,975	162,964,659	255,050,634	73.1%	Y
MEMPHIS INTL	107,486,076	128,093,225	235,579,301	76.2%	Y
THE WILLIAM B HARTSFIELD ATLANTA INTL	78,651,898	132,788,612	211,440,510	78.9%	Y
GEORGE BUSH INTERCONTINENTAL ARPT/HOUSTON	73,777,815	67,872,603	141,650,418	80.8%	Y

Key: kg=kilogram; MA=metropolitan area identified in the 2002 CFS.

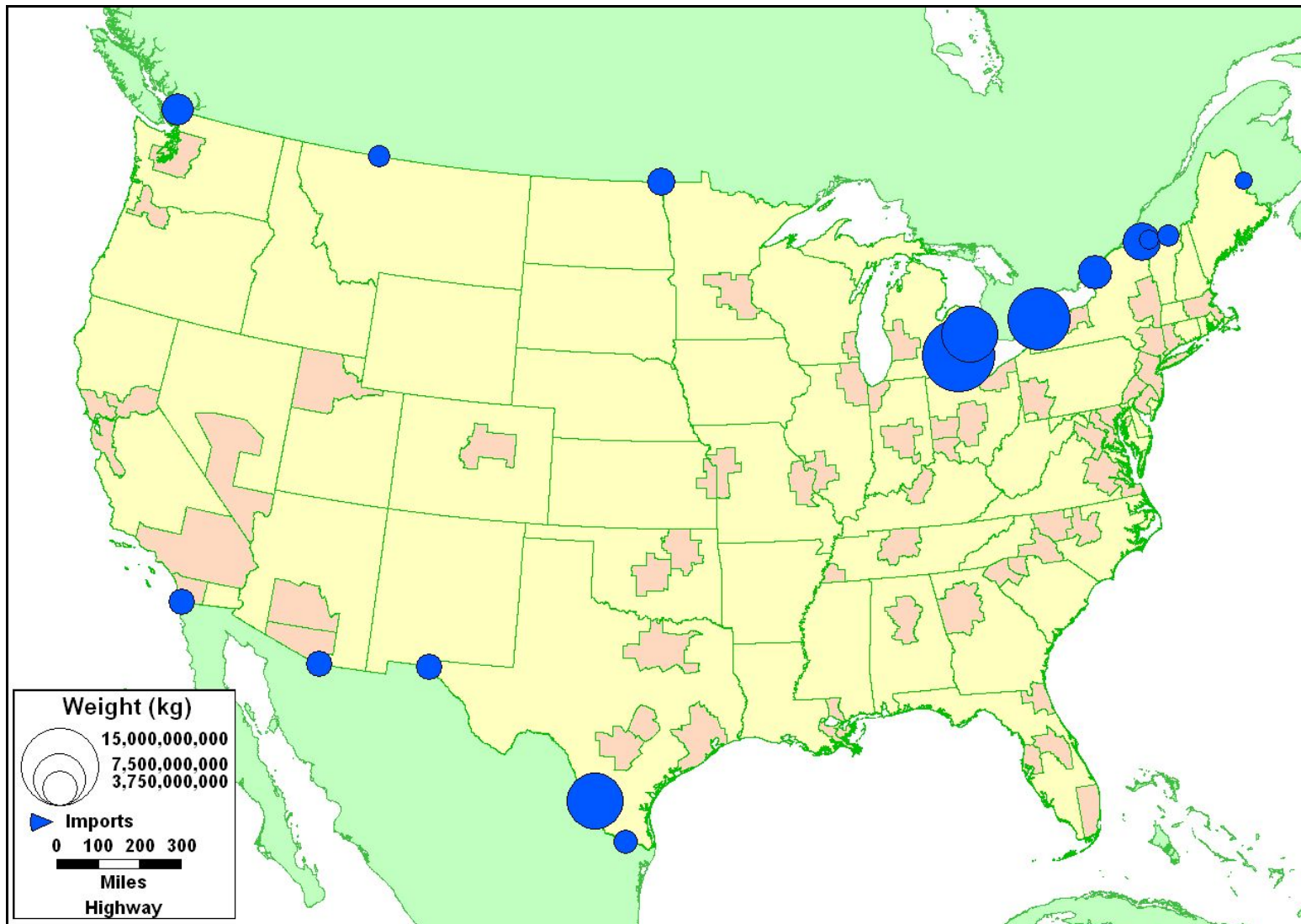


Figure A-1. Candidate Boarder Crossings by Weight for Highway

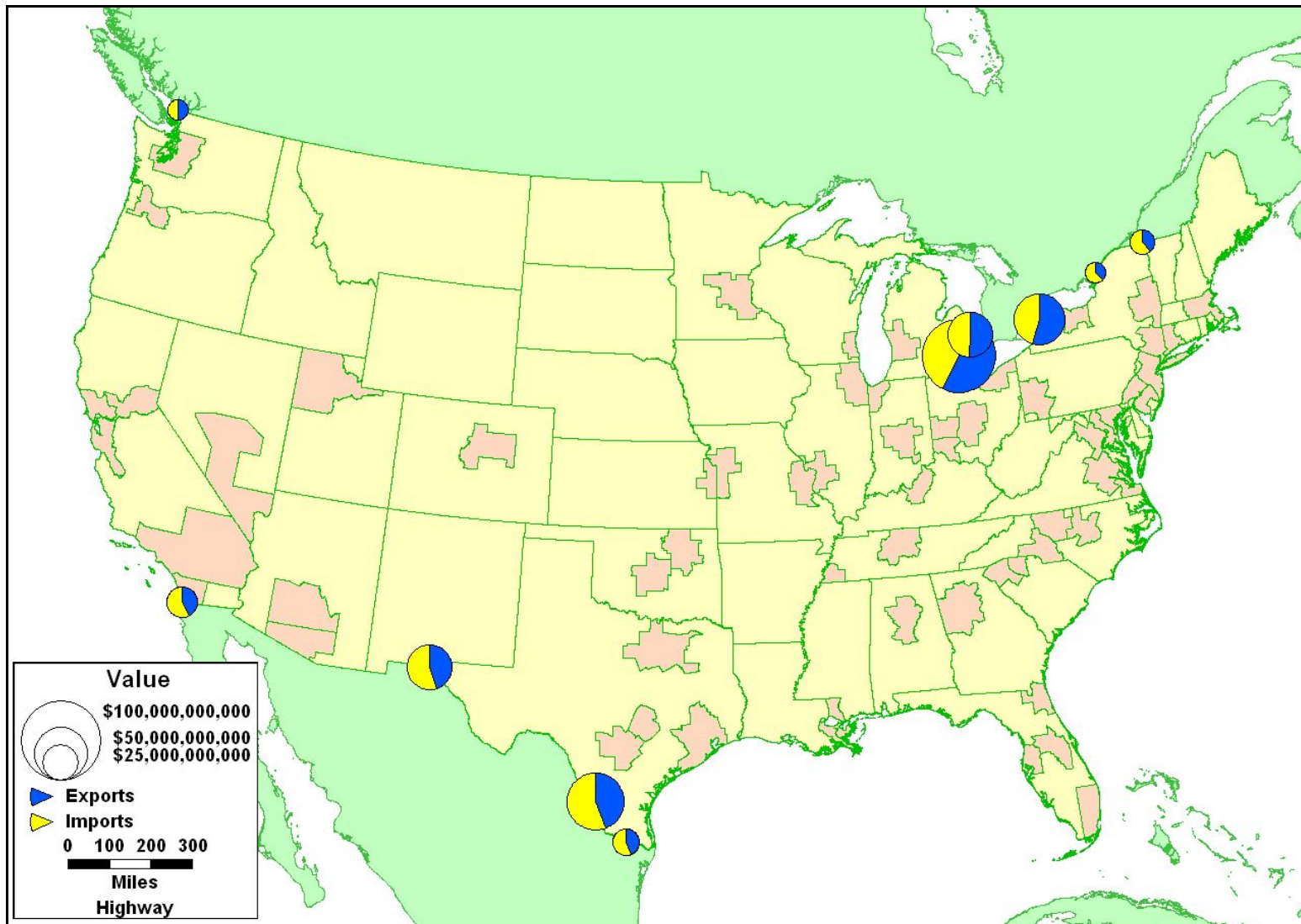


Figure A-2. Candidate Boarder Crossings by Value for Highway

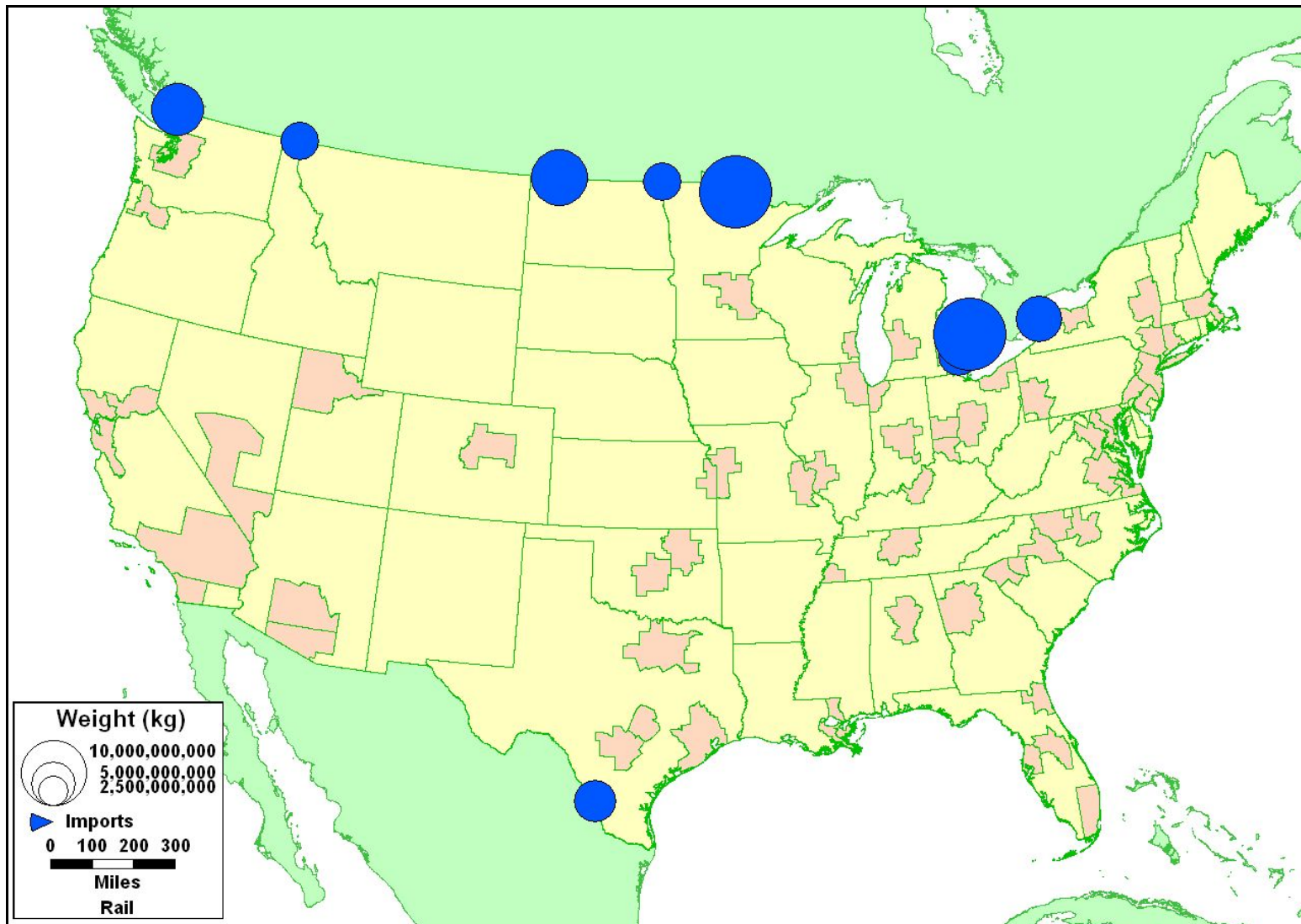


Figure A-3. Candidate Boarder Crossings by Weight for Rail

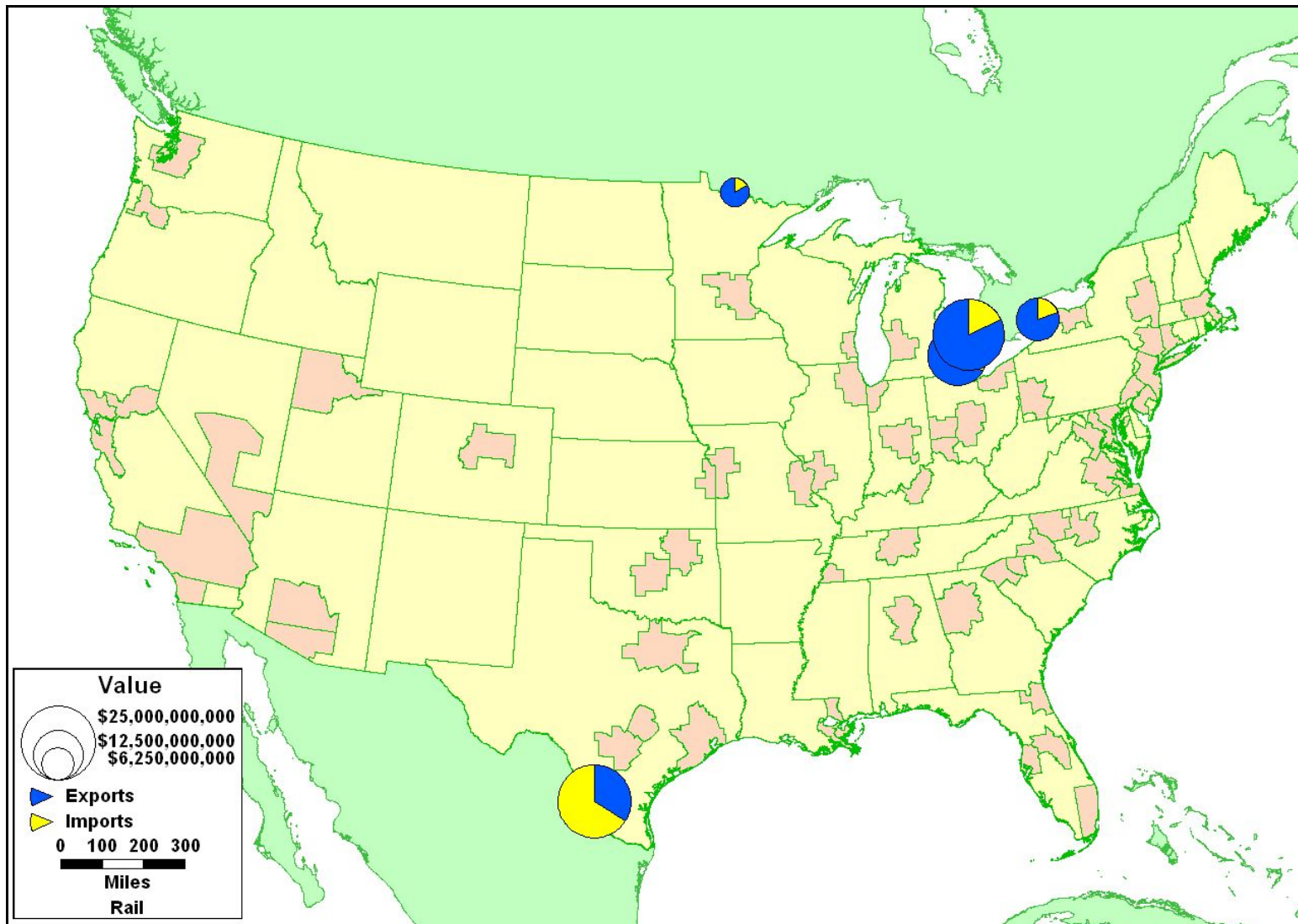


Figure A-4. Candidate Boarder Crossings by Value for Rail

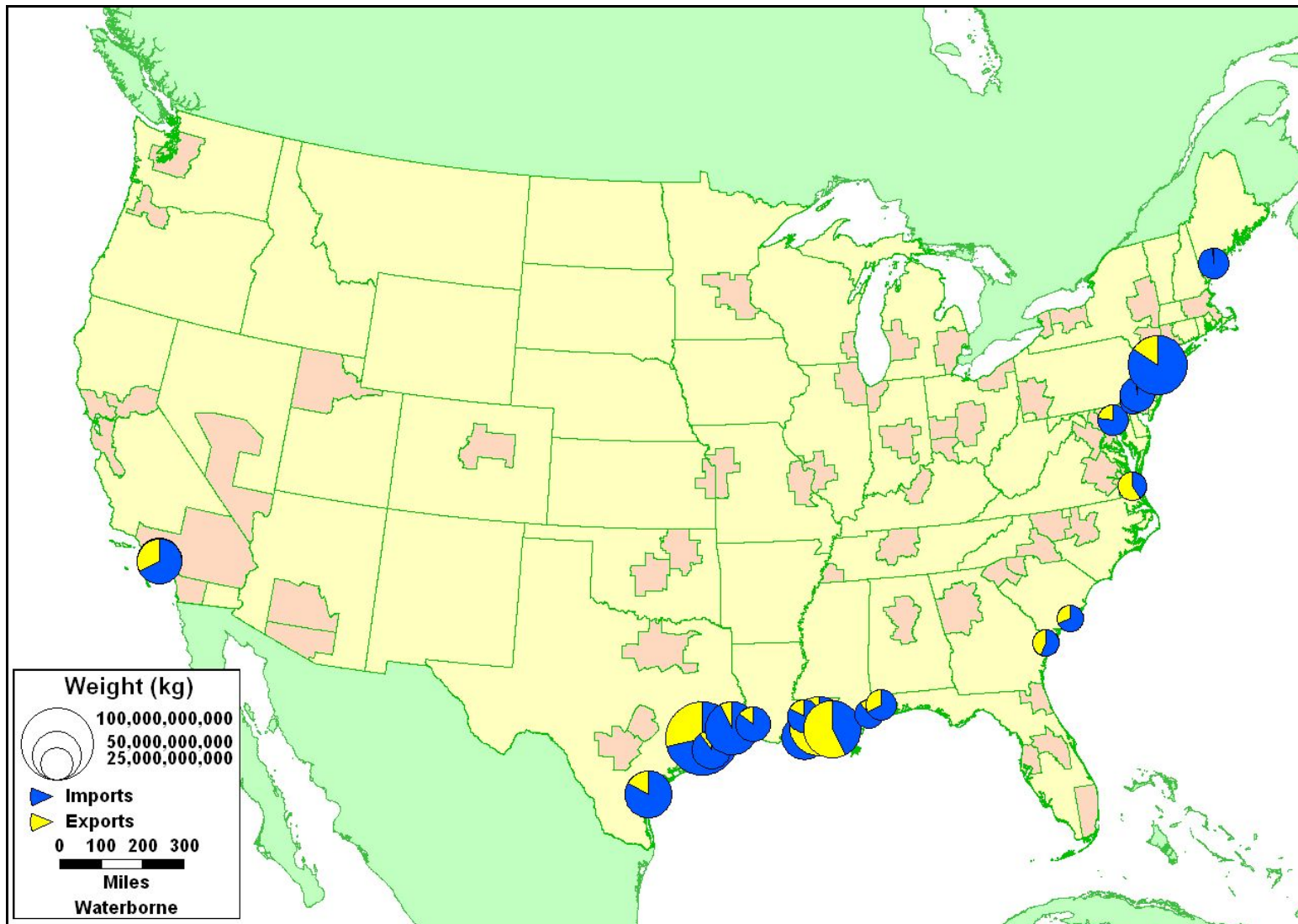


Figure A-5. Candidate Seaports by Weight

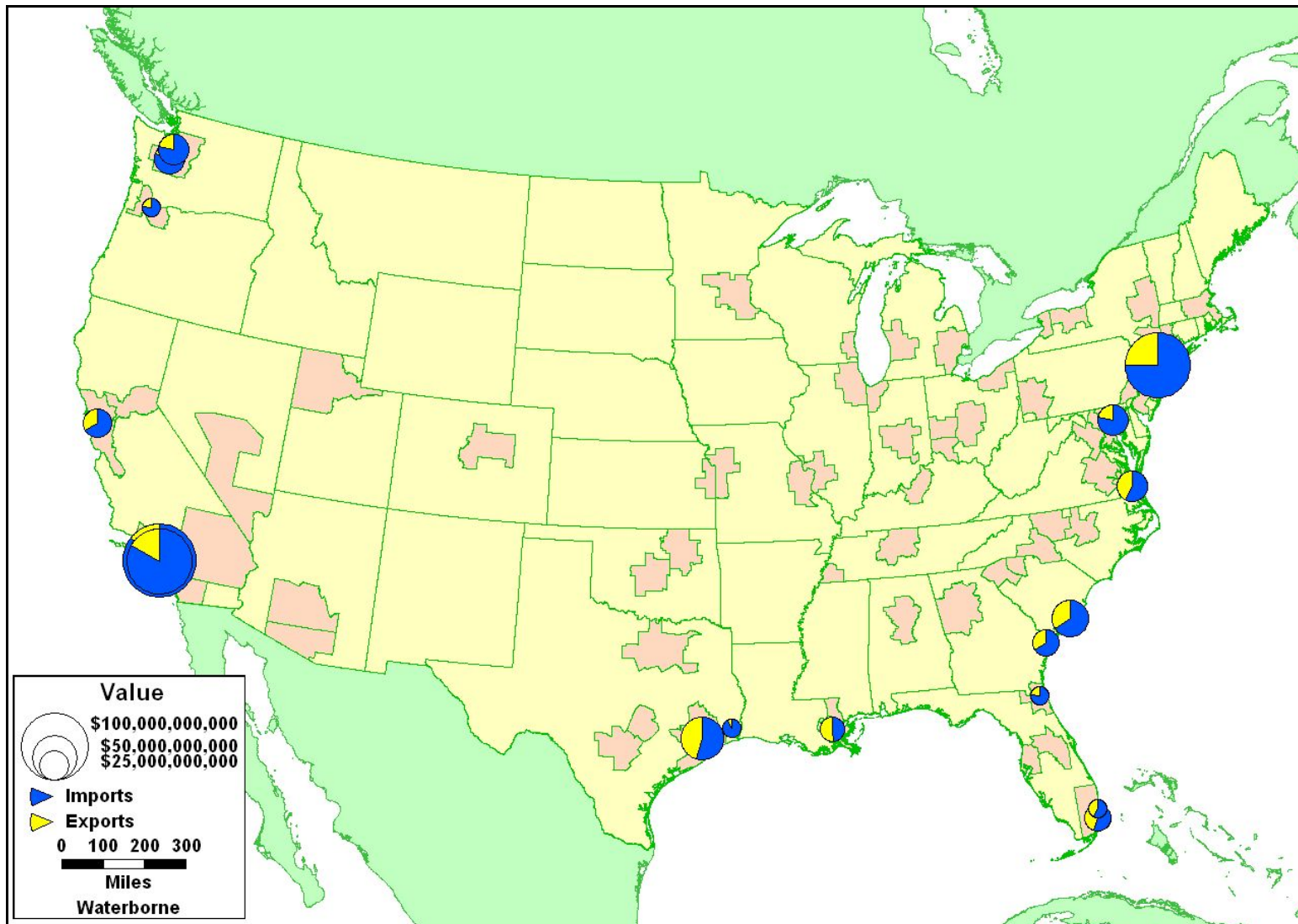


Figure A-6. Candidate Seaports by Value

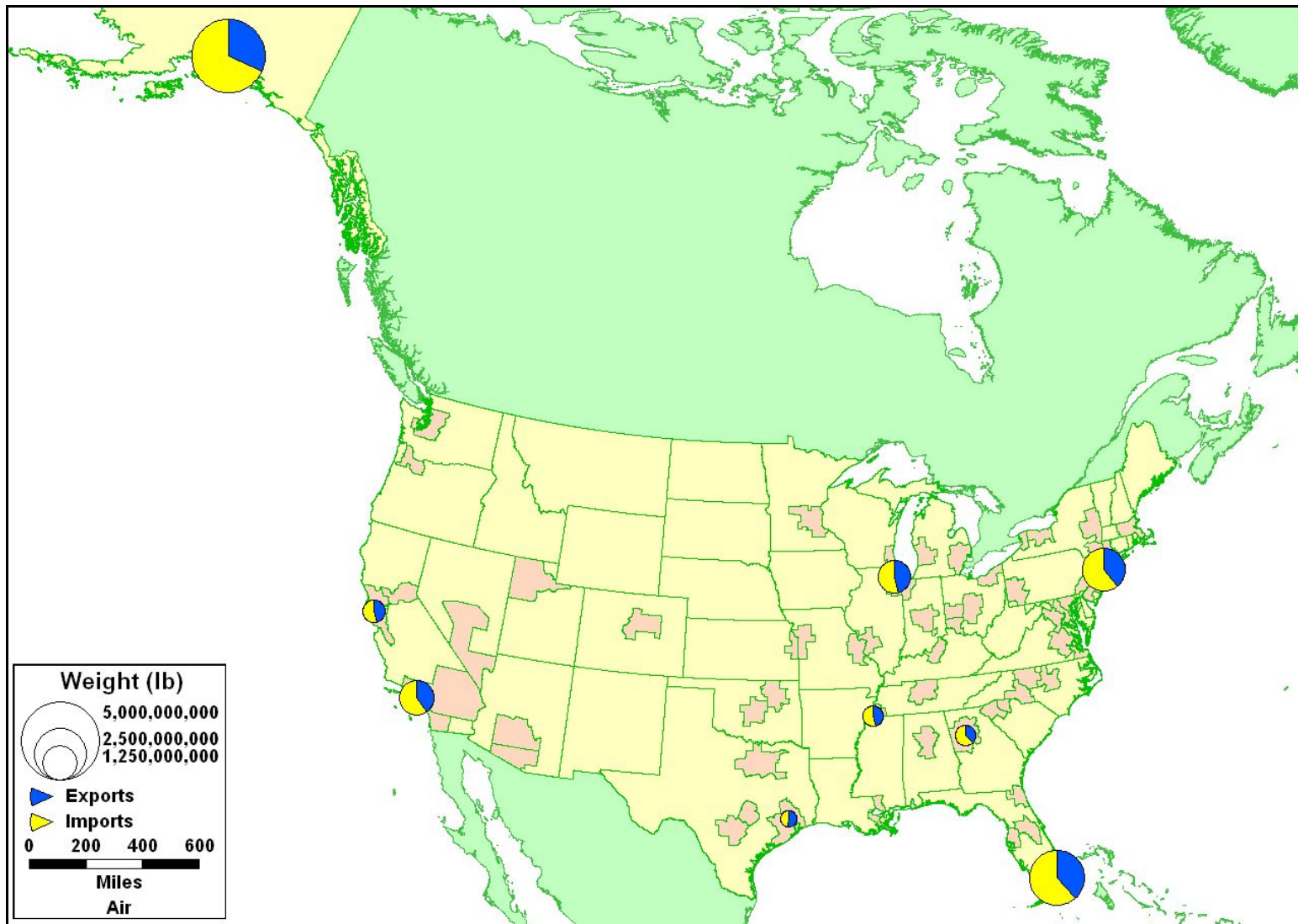


Figure A-7. Candidate Airports by Weight

Appendix B: Information on Top International Trade Partners

Table B-1. Top Trade Partners via Water by Weight

Name	Exports (kg)	Imports (kg)	Total Foreign Trade (kg)	Cumm. % of Total
Mexico	23,061,457,861	93,605,502,398	116,666,960,259	10.3%
Venezuela	3,474,773,871	95,411,723,239	98,886,497,110	19.1%
Canada	29,085,381,665	61,072,470,912	90,157,852,577	27.0%
Saudi Arabia	2,044,710,482	76,907,731,718	78,952,442,200	34.0%
Japan	48,806,198,500	11,869,385,184	60,675,583,684	39.4%
China	18,226,702,340	34,201,408,154	52,428,110,494	44.0%
Brazil	8,593,200,596	26,765,225,839	35,358,426,435	47.1%
United Kingdom	6,447,228,843	26,803,290,442	33,250,519,285	50.1%
Nigeria	2,229,042,926	30,991,500,053	33,220,542,979	53.0%
Colombia	4,645,619,402	27,068,050,580	31,713,669,982	55.8%
Korea, South	14,748,553,494	9,563,737,740	24,312,291,234	58.0%
Iraq	3,611,026	23,668,136,581	23,671,747,607	60.0%
Norway	414,707,970	22,555,687,638	22,970,395,608	62.1%
Angola	224,098,787	17,549,598,892	17,773,697,679	63.7%
Taiwan	12,538,482,387	4,999,698,453	17,538,180,840	65.2%
Trinidad and Tobago	829,441,461	16,526,869,818	17,356,311,279	66.7%
Russia	1,255,344,663	15,854,373,519	17,109,718,182	68.2%
Italy	8,465,907,962	7,679,773,772	16,145,681,734	69.7%
Netherlands	9,407,090,909	6,467,661,513	15,874,752,422	71.1%
Algeria	2,298,115,402	12,801,854,243	15,099,969,645	72.4%
Germany	4,939,176,305	9,844,256,384	14,783,432,689	73.7%
Spain	9,252,988,576	4,896,787,296	14,149,775,872	75.0%
Belgium	7,409,632,430	5,473,813,845	12,883,446,275	76.1%
Kuwait	190,291,986	12,361,971,182	12,552,263,168	77.2%
Australia	2,875,406,962	9,470,144,347	12,345,551,309	78.3%

Key: kg=kilogram

Table B-2. Top Trade Partners via Water by Value

Name	Exports (\$)	Imports (\$)	Total Foreign Trade (\$)	Cumm. % of Total
China	\$10,854,167,400	\$102,379,678,514	\$113,233,845,914	15.5%
Japan	\$24,124,038,101	\$87,310,362,092	\$111,434,400,193	30.8%
Germany	\$8,907,542,518	\$36,358,650,613	\$45,266,193,131	37.0%
Korea, South	\$10,254,683,629	\$20,992,546,466	\$31,247,230,095	41.3%
United Kingdom	\$9,494,168,980	\$18,188,810,802	\$27,682,979,782	45.1%
Taiwan	\$6,710,848,096	\$17,583,538,742	\$24,294,386,838	48.4%
Mexico	\$6,267,724,711	\$17,105,870,148	\$23,373,594,859	51.6%
Venezuela	\$3,404,877,678	\$14,961,536,008	\$18,366,413,686	54.2%
Brazil	\$6,298,081,751	\$10,823,457,236	\$17,121,538,987	56.5%
Saudi Arabia	\$3,465,460,436	\$13,023,271,106	\$16,488,731,542	58.8%
Italy	\$3,514,555,808	\$12,425,509,209	\$15,940,065,017	61.0%
France	\$3,972,666,626	\$9,030,887,457	\$13,003,554,083	62.7%
Thailand	\$2,162,861,788	\$10,395,531,080	\$12,558,392,868	64.5%
Netherlands	\$6,836,166,930	\$5,218,362,185	\$12,054,529,115	66.1%
Belgium	\$6,721,107,628	\$4,290,488,542	\$11,011,596,170	67.6%
Australia	\$5,801,210,060	\$4,958,350,799	\$10,759,560,859	69.1%
Malaysia	\$1,612,171,094	\$8,680,928,643	\$10,293,099,737	70.5%
Indonesia	\$1,962,625,861	\$8,049,346,516	\$10,011,972,377	71.9%
Hong Kong	\$4,550,286,760	\$5,434,860,826	\$9,985,147,586	73.3%
Canada	\$2,401,760,871	\$6,997,493,038	\$9,399,253,909	74.5%
India	\$1,600,028,978	\$6,156,691,960	\$7,756,720,938	75.6%
Russia	\$1,795,927,572	\$5,816,101,323	\$7,612,028,895	76.7%
Dominican Republic	\$3,621,050,334	\$3,479,789,641	\$7,100,839,975	77.6%
Singapore	\$4,253,295,002	\$2,528,481,973	\$6,781,776,975	78.6%
Spain	\$2,984,958,976	\$3,664,934,114	\$6,649,893,090	79.5%

Table B-3 Top Trade Partners via Air by Weight

Name	Exports (kg)	Imports (kg)	Total Foreign Trade (kg)	Cumm. % of Total
Japan	296,699,599	293,974,454	590,674,053	10.1%
China	76,288,908	461,221,258	537,510,166	19.2%
Germany	148,610,177	253,821,004	402,431,181	26.1%
United Kingdom	215,798,787	185,410,068	401,208,855	32.9%
Canada	197,590,921	62,917,460	260,508,381	37.4%
Taiwan	85,815,396	145,408,169	231,223,565	41.3%
France	91,153,830	121,807,948	212,961,778	44.9%
Italy	52,868,760	145,378,568	198,247,328	48.3%
Korea, South	73,049,276	119,014,021	192,063,297	51.6%
Netherlands	85,861,887	87,650,255	173,512,142	54.5%
Hong Kong	78,606,338	70,448,712	149,055,050	57.1%
Brazil	61,065,870	87,297,053	148,362,923	59.6%
Singapore	79,342,483	68,420,334	147,762,817	62.1%
Colombia	44,802,464	102,910,027	147,712,491	64.6%
Malaysia	35,234,209	99,790,003	135,024,212	66.9%
Chile	17,242,240	116,441,964	133,684,204	69.2%
Mexico	69,327,129	54,880,911	124,208,040	71.3%
India	24,509,798	76,241,189	100,750,987	73.0%
Thailand	20,111,688	66,237,702	86,349,390	74.5%
Australia	51,965,975	24,045,917	76,011,892	75.8%
Ireland	36,410,567	36,331,017	72,741,584	77.0%
Switzerland	25,728,690	45,445,261	71,173,951	78.3%
Philippines	15,037,066	54,456,711	69,493,777	79.4%
Israel	23,067,095	46,191,714	69,258,809	80.6%

Key: kg=kilogram

Table B-4. Top Trade Partners via Air by Value

Name	Exports (\$)	Imports (\$)	Total Foreign Trade (\$)	Cumm. % of Total
Japan	\$24,170,183,301	\$30,689,165,667	\$54,859,348,968	11.0%
United Kingdom	\$19,894,206,183	\$18,893,518,673	\$38,787,724,856	18.8%
Germany	\$15,002,809,470	\$18,842,915,170	\$33,845,724,640	25.6%
China	\$7,718,288,442	\$18,443,432,568	\$26,161,721,010	30.8%
France	\$12,001,457,018	\$13,199,865,749	\$25,201,322,767	35.9%
Ireland	\$4,707,135,047	\$20,359,962,439	\$25,067,097,486	40.9%
Taiwan	\$11,105,982,774	\$13,529,181,434	\$24,635,164,208	45.8%
Korea, South	\$10,390,562,379	\$13,879,772,625	\$24,270,335,004	50.7%
Malaysia	\$7,810,929,223	\$14,808,614,252	\$22,619,543,475	55.3%
Singapore	\$9,254,075,725	\$11,731,299,118	\$20,985,374,843	59.5%
Canada	\$11,962,140,068	\$8,771,445,239	\$20,733,585,307	63.6%
Italy	\$4,989,684,356	\$9,697,143,956	\$14,686,828,312	66.6%
Israel	\$4,507,038,037	\$9,811,341,826	\$14,318,379,863	69.4%
Netherlands	\$10,223,601,160	\$3,772,392,913	\$13,995,994,073	72.3%
Switzerland	\$6,124,309,335	\$6,592,602,638	\$12,716,911,973	74.8%
Philippines	\$5,335,166,666	\$6,703,744,566	\$12,038,911,232	77.2%
Hong Kong	\$7,576,272,892	\$3,470,727,321	\$11,047,000,213	79.4%
Belgium	\$5,097,393,604	\$4,960,162,872	\$10,057,556,476	81.5%

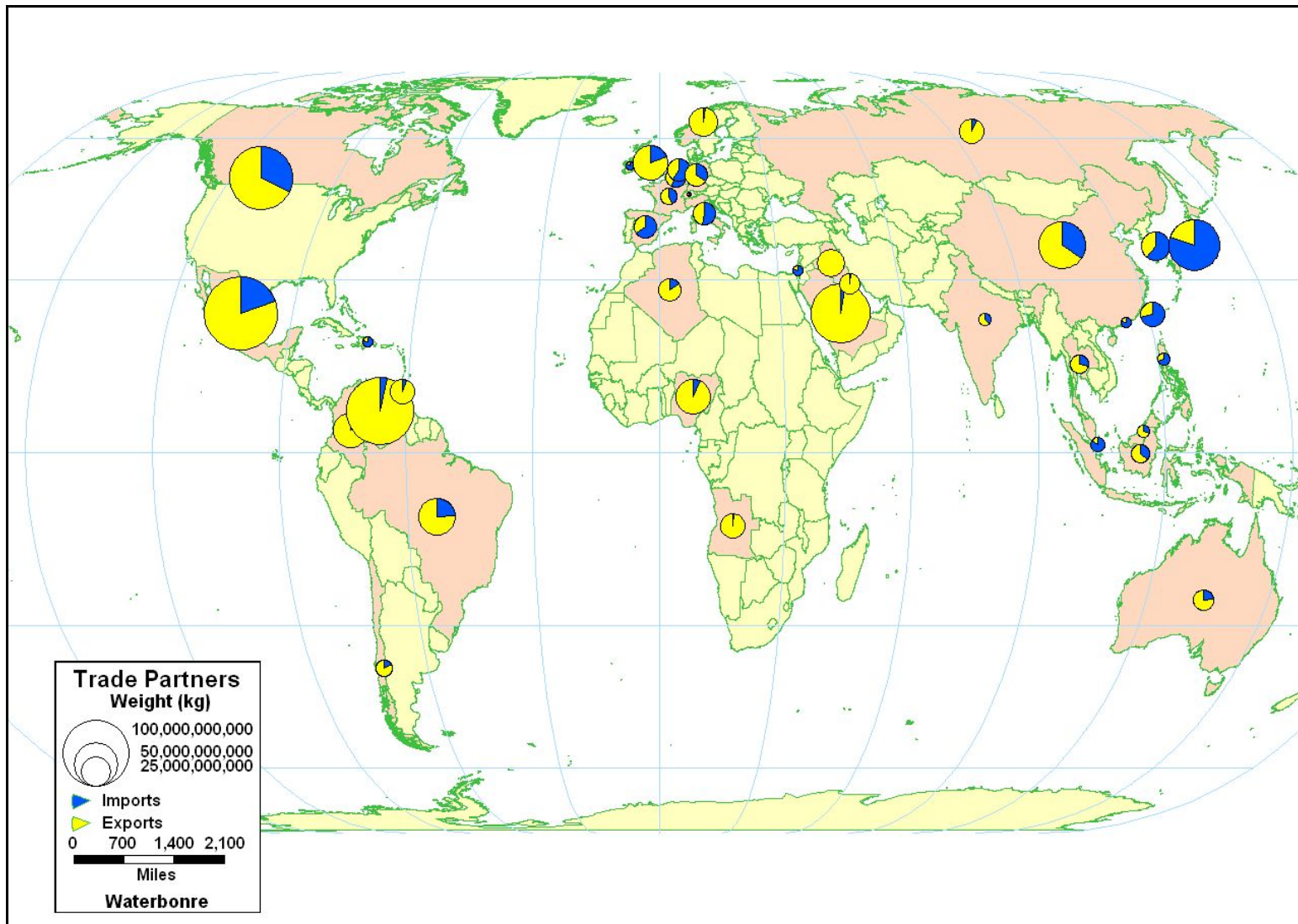


Figure B-1. Major Trade Partners by Weight via Waterway

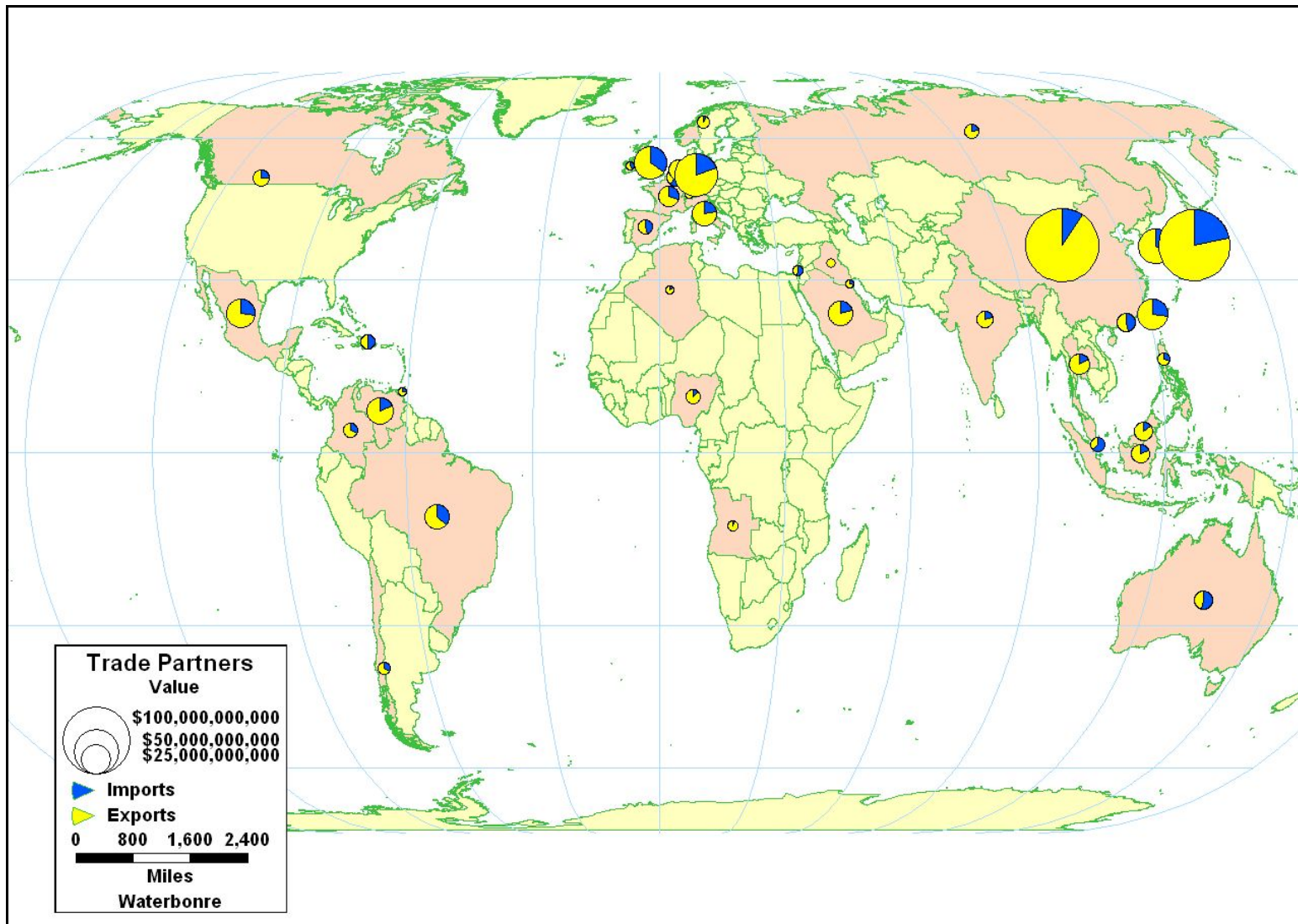


Figure B-2. Major Trade Partners by Value via Waterway

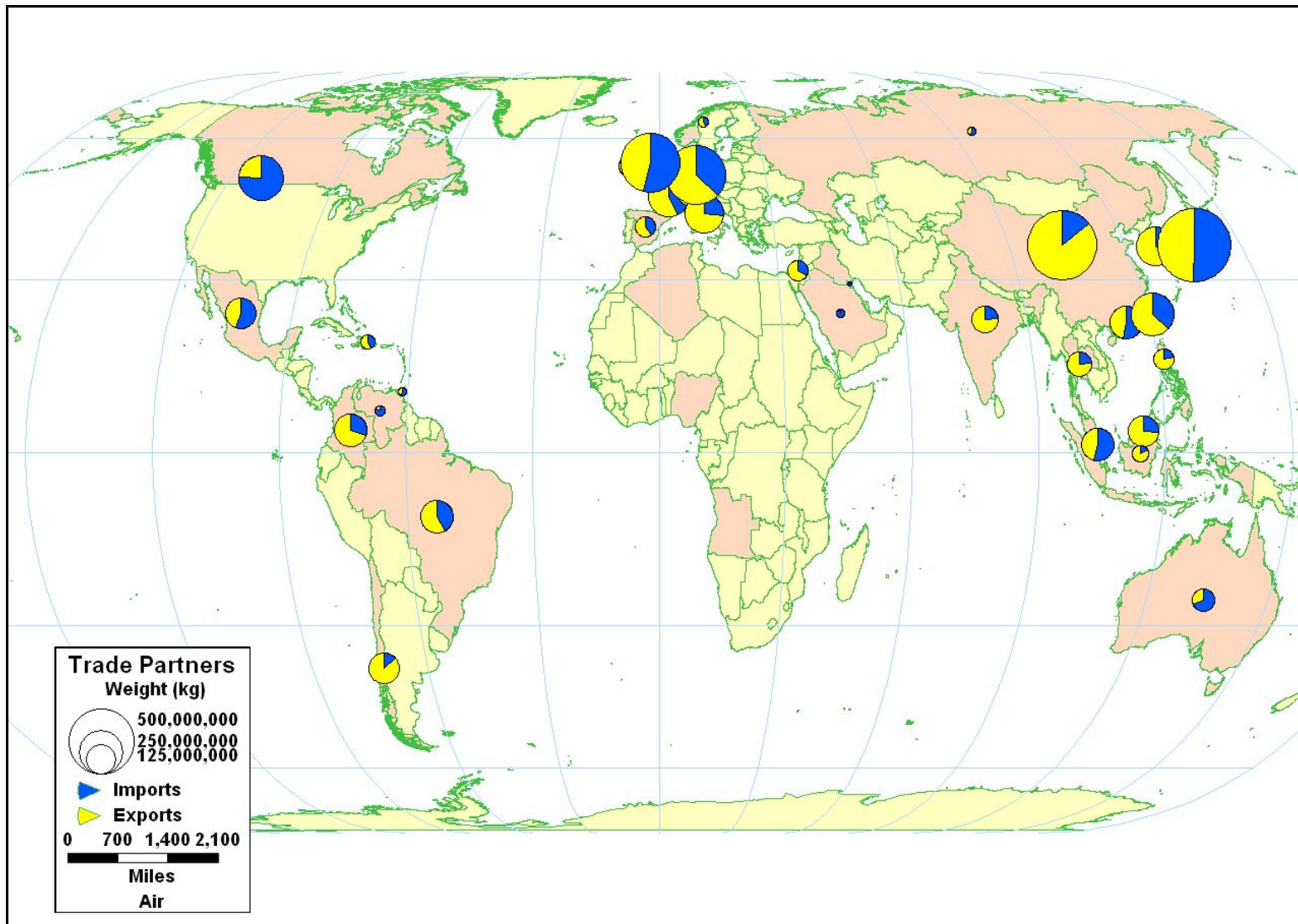


Figure B-3. Major Trade Partners by Weight via Air

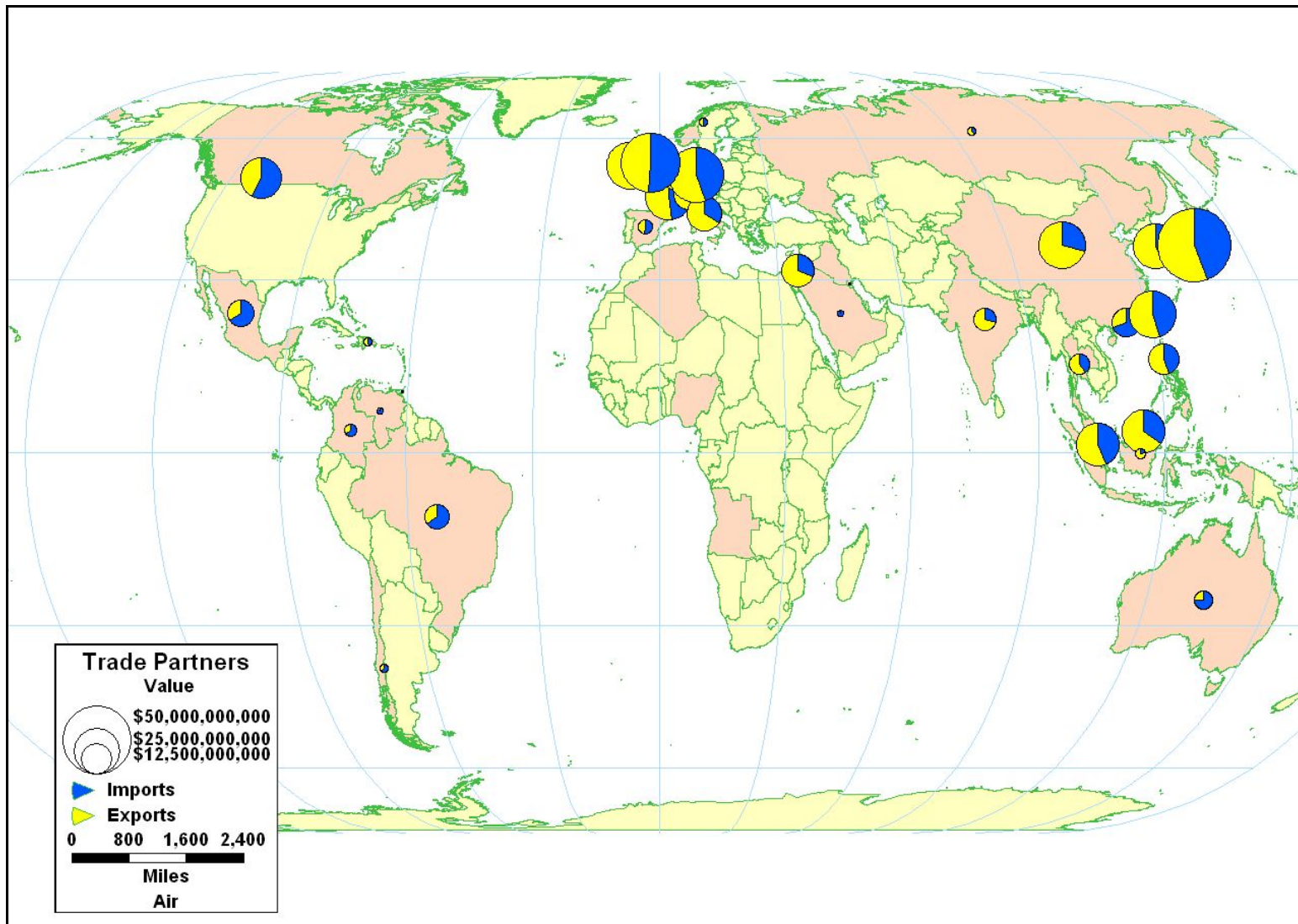


Figure B-4. Major Trade Partners by Value via Air